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Microbiological degradation of white phosphorus

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Abstract

© 2018 Izdatel'stvo Kalvis. All rights reserved. For the first time different taxonomic groups of microorganisms are inoculated on culture medium containing white phosphorus as the single source of phosphorus. On these media microorganisms grew and have not experienced phosphorus starvation. It is the world's first example of the inclusion of white phosphorus in the biosphere cycle of elemental phosphorus. The highest concentration corresponds to 5000 times excess of MPC of white phosphorus in wastewater! Devoted to the search for the white phosphorus metabolites, and the probable way of the phosphorus metabolism. The increase of cultures resistance resulting from directed selection is demonstrated for the first time. the comparison of the sequences of ribosomal genes of the fungus, steadily metabolizing the white phosphorus, with sequences of the GenBank database, allowed us to identify this microorganism as a new strain of Aspergillus Niger, to which we have assigned the number A. Niger AM1. Inoculation of A. Niger AM1 in medium containing just two sources of phosphorus (phosphate and white phosphorus) demonstrated that P4 does not exhibit toxic properties in relation to this microorganism. the slow growth of Aspergillus in the medium with white phosphorus is not due to the toxicity of the last one for the strain, but only due its inaccessibility as a phosphorus source.

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Keywords

Aspergillus Niger AMI, Biodegradation, Cultural mediums, Selection, Streptomyces sp. A8, Trichoderma asperellum F-1087, White phosphorus

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